

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
10/791,626	3/1/04	Robert E. Coifman et al	RCOIF3.1-001US

Response To Official Action

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ABEBE, Daniel Demelash	
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**AMENDMENTS TO THE SPECIFICATION**

Please make the following corrections to the specification:

[0027] Referring to FIG. 2, input speech 205 is provided to the speech recognition system via a voice collection device, for example, a microphone 210. Microphone 210 in turn is connected to the computer equipment associated with the microphone, shown as 105 in FIG. 1. Computer system 105 also includes a speech recognition software system 212. Numerous, commercial speech recognition software systems are ~~[[readably]]~~ readily available for such purpose including, but not limited to, ViaVoice offered by IBM and Dragon Naturally Speaking offered by ScanSoft. Regardless of the manufacturer of the product, the speech recognition software includes, generally, a speech recognition module 217 which is responsible for parsing the input speech 205 as digitized by the microphone 210 according to various, well-known speech recognition algorithms and heuristics. Language model 219 is also typically included with speech recognition software 212. In part, the language model 219 is responsible for parsing the input speech according to various algorithms and producing fundamental language components. These language components are typically created in relation to a particular language and/or application of interest, which the speech recognition system then evaluates against a textual vocabulary database 220 to determine a match. In frame-based systems, for example, incoming analog speech is digitized and the amplitude of different frequency bands are stored as dimensions of a vector. This is performed for each of between 6,000 and 16,000 frames per second and the resulting temporal sequence of vectors is converted, by any of various means, to a series of temporally overlapping "tokens" as defined in U.S. Pat. No. 6,073,097, which is incorporated herein by reference in its entirety. These tokens are then matches with similar temporal sequences of vectors generated from strings of text in the active vocabulary according to the active language model and any active set of "learned" user-specific phonetic patterns and habits.

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[0036] Referring again to FIG. 2, the speech recognition/voice transcription system of the present invention further includes a context identification module 240. The context identification module is coupled to one or more input and recognition components (FIG. 2, 205-230) of the overall speech recognition system 200 and is used to select or create a proper sub-database within the entire specified database 250. If, for example, the desired sub-databases to be used are based on a user context, then the context identification module may take input from a user identification device (not shown) or may determine the user from speech characteristics determined by the speech recognition software so as to select an appropriate user sub-database (e.g. 261) from the entire specified database 250. Alternatively, the data values within the specified database 250 may be loosely organized and the context identification module may actually condition the data values so as to dynamically create an appropriate user sub-database from the information stored within the specified database. As another example, the context identification module may monitor and interpret a particular form field that is active within an application 230 into which text input is to be provided. After making such a determination, the context identification module may select, or as mentioned above, actually condition the data values so as to dynamically create, an appropriate user sub-database from the information stored within the specified database.

[0042] A simplified example of the above-mentioned text string interrelation is provided below. As shown in FIG. 3, sub-database 381 provides text strings that may be input into findings field 330 and sub-database 382 provides text strings that may be input into interpretations field 350. However, unlike [[a]] fields with a limited range of accepted input within the electronic computer form, the name field 315 for example, sub-database 381 is designed to match text strings to a more general and varied voice input provided to the speech recognition system. FIG. 6 shows one specific embodiment of the specified, text string sub-database 382 of FIG. 3. Sub-database 382 provides text string records related to medical interpretations which are stored within sub-database 682 in tabular format. In this

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particular embodiment, individual records 615, 616 and 617 contain text strings from previously dictated (specified) interpretations which are provided for the purpose of matching a user's speech input when the interpretations field 350 (FIG. 3) is the active dictation field. Other relational data, such as weighting information 652 and interrelational context information (e.g. age 654, user 656, findings 658) may also be included within text string sub-database 682. In the example of FIG. 6, interpretations text strings, such as pneumonia and dysphagia, are provided as potential text strings to be evaluated against a user's dictation to provide a text input to the interpretations field.

[0064] With respect to electronic forms, a computerized medical record has functionally separate data[e] fields. In addition, other types of medical reports have structured sections. Speech recognition transcription accuracy for each such application can be enhanced through the prioritization and selection of first pass, text string databases for each such field on the basis of numerous factors including, but not limited to: the age and sex of the patient; problems listed as reason for that patient's visit or to be determined during that patient's visit; previously recorded diagnoses for that patient; previous use of text strings to be prioritized by that physician in reports for that patent; previous use of those text strings with that combination of other selection factors by that physician for other patients; and/or previous use with that combination of other factors by other members of that specialty.

[0071] With specific application to Example #1 provided above, the method of the present invention provided in the flow diagram of FIG. 7 and may be modified to operate[[ion]] more efficiently by including some of the elements of the process shown in FIG. 8. For each context of user (radiologist), type of imaging study (as chest x-ray or sinus CT), patient demographics (including age, sex, past medical history, reason for this study) and field of report, first pass vocabulary 842 may be provided which includes previous dictations by the same user when all the other variables were identical. The second pass vocabulary 843 may

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be provided which includes dictations by other members of the radiology group when all other variables were the same as those of the present report. The third pass vocabulary 844 may be provided which includes other dictations by the present radiologist into the same field for the same type of study but for patients with all combinations of age, sex, past medical history and reason for study. Thus a multiple pass series of specific context dependant subdatabases may be provided in actual application before the base vocabulary of the speech recognition software is employed to provide a match.

The applicant represents that no new material is being presented as a result of these amendments, but instead, that they are being presented to correct various technical errors in the originally-filed specification.